Hprt somatic mutation analysis in a radiation exposed Russian population. Thomas, C., Nelson, S.*, Grosovsky, A.*, Nelson, D., Jones, I. LLNL, Livermore, CA 94551 and *UC Riverside, CA 92521.

Somatic mutation analysis was used to determine if deletion mutations are increased in people after exposure to low doses of radiation. A group of Russians ("liquidators") who may have been exposed to low levels of radiation during the Chernobyl nuclear accident clean-up and Russian controls were studied. Hprt (hypoxanthine phosphoribosyltransferase) gene deletions were detected as missing exons in PCR performed on DNA of thioguanine resistant peripheral blood lymphocytes. To date, 214 mutants from 28 male controls and 241 mutants from 51 male liquidators have been examined. The proportion of total deletions was increased in the liquidator population ($p<0.09$): in 4 mutants from 3 controls and 10 mutants from 9 liquidators all 9 hprt exons were deleted. The size of the deletions, assayed by PCR for loss of markers external to hprt, is being studied to evaluate mutation mechanism. The results indicate that analysis for deletion mutants provides evidence for radiation exposure of a population. Work performed under the auspices of US DOE by LLNL under contract W-7405-ENG-48 and CA59431 from NIH.